

1. The 1st to 8th successive ionisation energies, in kJ mol^{-1} , of an element in period 3 are:

1012 1903 2912 4957 6274 21,269 25,398 29,855

What is the element?

- A Al
B Si
C P
D S

big 'jump' indicates moving to an inner shell.

5 e^- in outer shell so element is in group 5 (15) \therefore P

Your answer

C

2. Which statement best explains why nitrogen has a larger first ionisation energy than oxygen?

- A** N atoms have less repulsion between p-orbital electrons than O atoms.
generally a high nuclear charge means higher 1st ionisation energy due to more nuclear attraction
- B** N atoms have a smaller nuclear charge than O atoms.
more repulsion
- C** N atoms lose an electron from the 2s subshell, while O atoms lose an electron from the 2p subshell.
both N and O lose electrons from 2p subshell
- D** N atoms have an odd number of electrons, while O atoms have an even number.
trend: ionisation energies across periodic table
- Your answer A *so odd/even number of electrons has no effect*

[1]